

In the Claims

The listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-11 (cancelled)

12. (Currently amended) A device for integrating electrodes for characterizing the flow of a multiphase fluid into a tubing through which the fluid flows, comprising:

a tube section made out of an electrically insulating material and having an internal diameter substantially equal to that of the tubing, said tube section being integrated into the tubing and bearing the electrodes on its external surface; and

a flexible compensation sheath that encircles the tube section bearing the electrodes, the sheath delimiting, with the tube section, a first closed annular space which filled with an insulating and incompressible fluid, and with a portion of the tubing encircling the sheath, a second annular space which communicates with the fluid flowing in the tubing.

13. (Canceled)

14. (Previously presented) The device as claimed in claim 13, wherein seal rings are secured on the ends of the tube section bearing the electrodes.

15. (Previously presented) The device as claimed in claim 14, wherein the flexible compensation sheath is an elastic membrane, the ends of which are directly or indirectly secured on the seal rings.

16. (Previously presented) The device as claimed in claim 14, wherein the seal rings are secured on the ends of the tube section bearing the electrodes by means of interference or shrink fit, brazing, molding, O-rings, or bonding.

17. (Previously presented) The device as claimed in claim 14, wherein the tube section bearing the electrodes forms, with the compensation sheath and the seal rings, a sensor assembly which is mounted within a junction area between two sections of the tubing.

18. (Previously presented) The device as claimed in claim 17, wherein the sensor assembly is flexibly mounted within the junction area, with interposition of elastic mountings.

19. (Previously presented) The device as claimed in claim 17, wherein the junction between the two sections of the tubing is threaded or welded.

20. (Previously presented) The device as claimed in claim 12, further comprising a mixing system placed in the tubing, upstream from the tube section.

21. (Previously presented) The device as claimed in claim 20, wherein the mixing system is a Venturi with an internal diameter d such as $0.316 < \beta < 0.7751$, with $\beta = d/D$, D being the internal diameter of the tubing, and the distance between the outlet end of the Venturi and inlet end of the tube section bearing the sensors is between 1 and 10 times the internal diameter of the tube.

22. (Previously presented) The device as claimed in claim 12, wherein the tube section made out of an electrically insulating plastic, rubber derivative, polymer or ceramic material.